Quiz 1.

- Mr. Johns. is admitted to general hospital with pneumonia, the antibiotic tobramycin is ordered, the Vd of tobramycin is 40 L. You wish to give him a loading dose to achieve a therapeutic plasma level of 4mg/L rapidly, how much should be given:

A. 1 mg

B. 10 mg.

C. 115.2 mg.

D. 160 mg.

E. None of the above

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- The loading dose = Vd × Tc (Css)
- So The loading dose= 40 × 4 = 160 mg/L.
- So the answer is D.

Quiz 1.

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A. 1 mg
B. 10 mg.
C. 115.2 mg.
D. 160 mg.
E. None of the above

Quiz2

- The Vd of propranolol is 300 L / 70 kg, the oral bioavailability is 0.25. what is the dose needed to achieve a plasma equivalent to steady state level of 20 ugm /L ?

A. 4 mg.

B. 8 mg.

C. 12 mg.

D. 20 mg.

E. 24 mg.

$$LD = \frac{Vd \times Tc}{F}$$

$$LD = \frac{300L \times 20\ \mu g}{0.25}$$

$=6000\ \mu g \times 4 = 6\ mg \times 4 = 24\ mg$

So the answer is E.

Quiz2

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A. 4 mg.

B. 8 mg.

C. 12 mg.

D. 20 mg.

E. 24 mg.

Quiz 3

- Drug A is known to be distributed in the total body water, what dose (mg) is needed to obtain an initial level of 10 mg/L in a patient weighing 70 kg:

A. 420 mg/L
B. 300 mg/L
C. 210 mg/L
D. 100 mg/L
E. 70 mg/L

- In a patient 70 kg, the total body water is about 42 L, which is equal to the Vd of drug A,
- SO the loading dose will be

= Vd × Tc = 42 × 10 = 420 mg

So the answer is A.

Quiz 3

- Drug A is known to be distributed in the total body water, what dose (mg) is needed to obtain an initial level of 10 mg/L in a patient weighing 70 kg:

A. 420 mg/L
B. 300 mg/L
C. 210 mg/L
D. 100 mg/L
E. 70 mg/L

Quiz 4:

- 25 years old female was given 200 mg of a drug IV in a single dose during 1st 120 min its 100mg were eliminated. As this drug follows 1st order kinetics, after 6 h the amount of the drug left behind in blood will be:

A. None

B. 5 mg.

C. 15 mg.

D. 35 mg.

E. 25 mg.

- **As it reaches half of the dose (100 mg) after 120 min, this means that 120 min (2 h) is the t ½ .**
- **SO after the 1st 2 hours the amount of the blood will be 100 mg, the next 2 h will be 50 mg and finally the last 2h will be 25 mg.**
- **The answer is E.**

Quiz 4:

- **25 years old female was given 200 mg of a drug IV in a single dose during 1st 120 min its 100mg were eliminated. As this drug follows 1st order kinetics, after 6 h the amount of the drug left behind in blood will be:**

A. **None**
B. **5 mg.**
C. **15 mg.**
D. **35 mg.**
E. **25 mg.**

Quiz 5:

- A single 100 mg dose of enalapril was given to hypertensive patient . After 1st $t_{1/2}$ of 3h, its plasma concentration was 50 mg/ml. To reach almost 0.75 mg/ml, it will take:

A. 9 hours.
B. 15 hours.
C. 21 hours.
D. 27 hours.
E. 30 hours

- We are starting with 100 mg dose:
- After the 1st t½ it will be 50 mg
- After the 2nd t½ it will be 25 mg
- After the 3rd t½ it will be 12.5 mg
- After the 4th t½ it will be 6.25 mg.
- After the 5th t½ it will be 3.125 mg.
- After the 6th t½ it will be 1.562 mg.
- After the 7th t½ it will be 0.75 mg.
- So 7 × 3 = 21 hours.
- The answer is C.

Quiz 5:

- **A single 100 mg dose of enalapril was given to hypertensive patient . After 1st t of 3h, its plasma concentration was 50 mg/ml. To reach almost 0.75 mg/ml, it will take:**

A. **9 hours.**
B. **15 hours.**
C. **21 hours.**
D. **27 hours.**
E. **30 hours**

Quiz 6

- At 12 h after IV administration of a bolus dose, the plasma level of a drug is 3 mg/L, if Vd = 10 L, and elimination half life = 6 h, what was the dose administered:

A. 120 mg.

B. 180 mg.

C. 240 mg.

D. 480 mg.

E. 570 mg.

- After 12 h (i.e. 2 successive t½) and the drug is 3mg/L, this means that the **C_o was 3 × 2 × 2 = 12 mg/L**

- **& since Vd = The dose of the drug/C_o**

- **SO the dose of the drug = Vd × C_o**

  = 10 × 12

  = 120 mg

SO the answer is A.

Quiz 6

- **At 12 h after IV administration of a bolus dose, the plasma level of a drug is 3 mg/L, if Vd = 10 L, and elimination half life = 6 h, what was the dose administered:**

A. **120 mg.**
B. **180 mg.**
C. **240 mg.**
D. **480 mg.**
E. **570 mg.**

Quiz 7:

- A drug achieves a plasma level of 16 mg shortly after the administration of the 1st oral dose. If the half life and dosing interval is 6 h, what is the approximate plasma level shortly before the administration of the 5th dose:

A. 15 mg.
B. 24 mg.
C. 28 mg.
D. 30 mg.
E. 35 mg.

- We are starting with 16 mg dose:
- After the 1st t½ it will be 8 mg…. then another 16 mg (2nd dose) is given then it will be 24 mg.
- After the 2nd t½ it will be 12 mg….. then another 16 mg (3rd dose)is given then it will be 28 mg.
- After the 3rd t½ it will be 14 mg ….. then another 16 mg (4th dose) is given then it will be 30 mg. After the 4th t½ it will be **15 mg**.
- **& This will be the dose just before the fifth dose..**

So the answer is A.

Quiz 7:

- A drug achieves a plasma level of 16 mg shortly after the administration of the 1st oral dose. If the half life and dosing interval is 6 h, what is the approximate plasma level shortly before the administration of the 5th dose:

A. 15 mg.

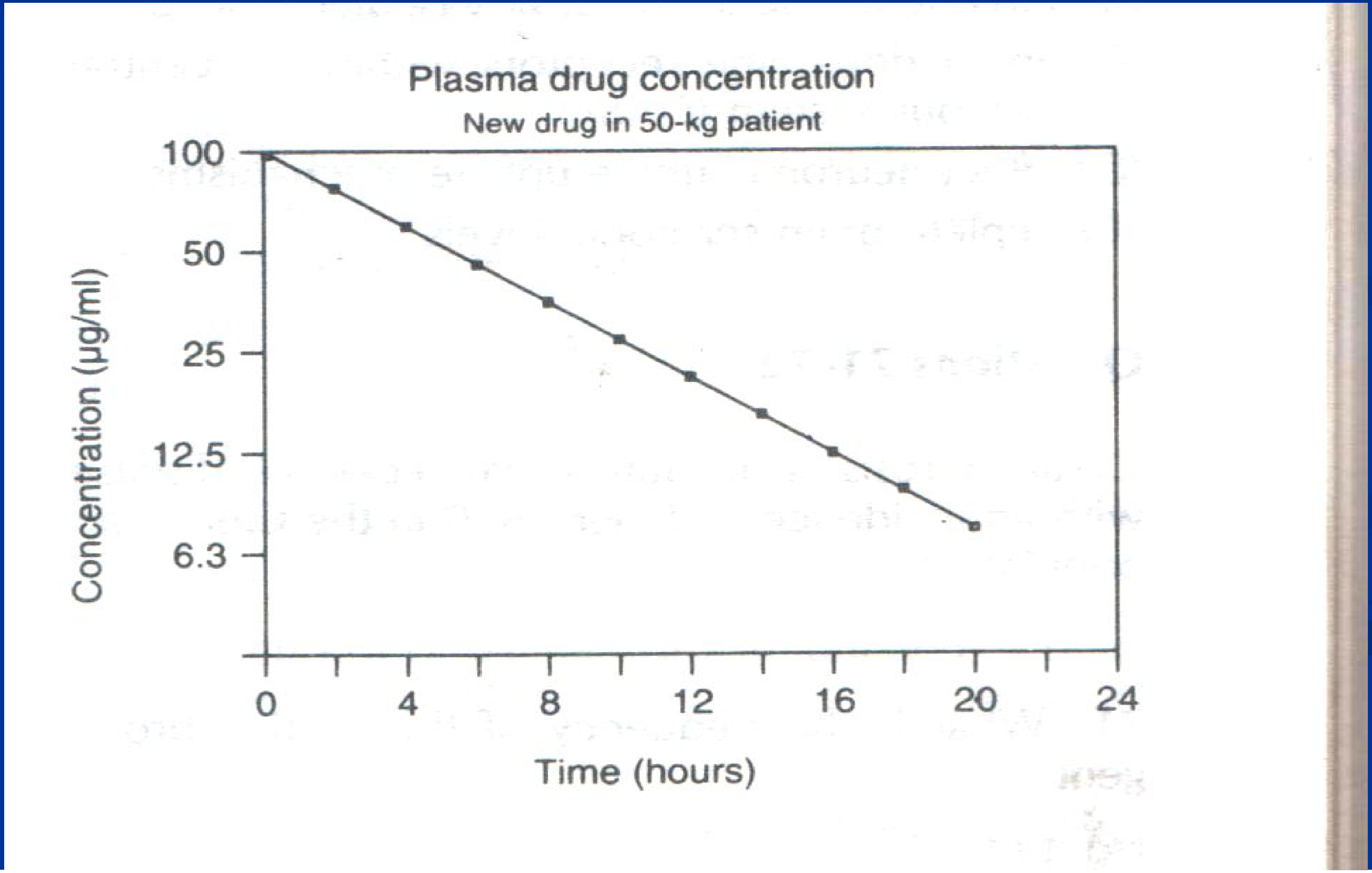
B. 24 mg.

C. 28 mg.

D. 30 mg.

E. 35 mg.

Quiz 8: **A patient weighing 50 kg is given 20mg/kg dose of a new drug. The plasma concentration determined over time are illustrated in the graph below:**



A. The drug volume of distribution is approximately:

A. 200 ml.
B. 1 L.
C. 2L.
D. 10 L.
E. Insufficient information to answer.

Again

Vd = The dose of the drug / C_0

$$Vd = 50 \times 20\ /100$$

$$Vd = 10L$$

The answer is D.

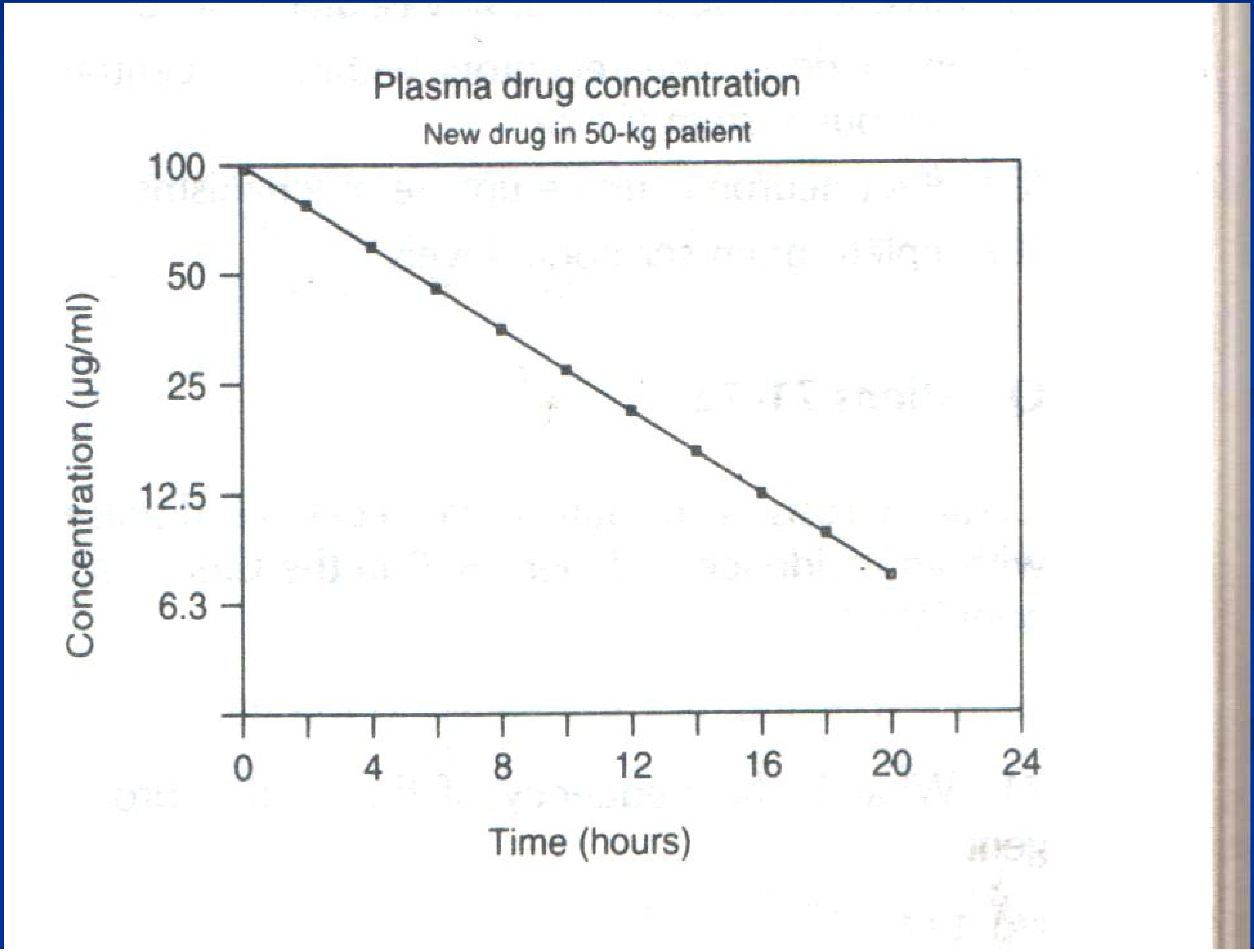
A. The drug volume of distribution is approximately:

A. **200 ml.**
B. **1 L.**
C. **2L.**
D. **10 L.**
E. **Insufficient information to answer.**

B. The half- life elimination of this drug is approximately;

A. 1 hour.
B. 2 hour.
C. 4 hour.
D. 10 hour.
E. 12 hour.

The time needed for the 100 µg/ml to reach to 50 µg/ml , according to the diagram, is 4 hours. The answer is c.



Quiz 9:

- Mr. Adam is being given drug B, by IV injection at regular intervals every 8 hours, what is the optimal dose that should be prescribed to him if the target concentration needed for patient is 500 μg/ml, and if its clearance is 20 ml/min?

A. 8 mg.

B. 10 mg.

C. 13 mg.

D. 46 mg.

E. 60 mg.

- This is the MD question;

$$MD = CL \times Tc \times \text{dosing interval}$$

So $MD = 20 \times 500 \times 6 =$

$= 60000\ \mu g/ml = 60\ mg/ml$

- So the answer is E.

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A. 8 mg.

B. 10 mg.

C. 13 mg.

D. 46 mg.

E. 60 mg.

Quiz 10:

- In a patient weighing 70 kg, acetaminophen has a VD = 70 L and Cl = 350 ml/min, the elimination half life of the drug is approximately:

A. 35 min.

B. 70 min.

C. 140 min.

D. 210 min.

E. 280 min.

- As the **$T\tfrac{1}{2} = 0.7 \times Vd\ / CL$**

Then:

$T\tfrac{1}{2} = 0.7 \times 70 \times 1000\ /\ 350$

$T\tfrac{1}{2}$ = 140 min.

- Notice the Clearance is 350 **ml/min**, which is 350/1000 **L/min**
- ◌ **SO the answer is C**

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THANK YOU